1129-20-237 **Daniela B Nikolova-Popova*** (dpopova@fau.du), 777 Glades road, Boca Raton, FL 33435, and **Luise-Charlotte Kappe**, **Spyros Magliveras**, **Eric Swartz** and **Michael Epstein**. *On the Covering Number of Small Symmetric, Alternating Groups, and Some Sporadic Simple Groups.*

We say that a group G has a finite covering if G is a set theoretical union of finitely many proper subgroups. The minimal number of subgroups needed for such a covering is called the covering number of G denoted by σ(G): Let Sn be the symmetric group on n letters. For odd n Maroti determined σ(Sn) with the exception of n = 9, and gave estimates for n even showing that σ(Sn) $\leq$ 2n - 2. We show that σ(S8) = 64, σ(S10) = 221, σ(S12) = 761. We also show that Maroti's result for odd n holds without exception proving that σ(S9) = 256. We establish in addition that the Mathieu group M12 has covering number 208, and improve the estimate for the Janko group J1 given by P.E.Holmes. In another paper, we establish the covering number of A9, and A11. As of now, the smallest values of n for which the covering numbers of Sn, and An are not known are n=14, and n=12 respectively. The methods we use involve GAP calculations, incidence matrices and linear programming. The coverings turn out to be dependent on the arithmetic nature of n. However, some results for larger classes of Sn have been established. (Received March 16, 2017)